

REMARKS

Claims 1-15 are pending in this application. By this Amendment, claims 1 and 9 are amended. Claim 9 is amended only to correct grammatical errors and not in response to a rejection of the claims. No new matter is added due to the amendment of the claims.

I. Claim Rejections under 35 U.S.C. §103

Claims 1-15 are rejected under 35 U.S.C. §103(a) as unpatentable over U.S. Patent 5,645,706 to Matsuda. The rejection is respectfully traversed.

Matsuda fails to disclose in each and every feature as alleged in the Office Action, or as recited in the claims as amended. For example, Matsuda fails to disclose or suggest an electrolytic phosphate chemical treatment method of forming a film composed of a phosphate compound and a metal that is reduced and precipitated from an ionic state on the surface of a metal material article to be treated, comprising performing the electrolytic treatment on said article in a phosphate chemical treatment bath by contacting said metal material article having electrical conductivity with said phosphate chemical treatment bath containing phosphate ions, phosphoric acid, nitrate ions, metal ions that form a complex with the phosphate ions in said phosphate chemical treatment bath, and metal ions for which the dissolution-precipitation equilibrium potential at which the metal ions dissolved in said phosphate chemical treatment bath are reduced and precipitate as metal is equal to or greater than -830 mV, which is the cathodic reaction decomposition potential of water when indicated as the hydrogen standard electrode potential, and the treatment bath is substantially free of metal ions, other than those which are a component of a film which will form sludge, wherein, the oxidation-reduction potential (ORP) of said phosphate chemical treatment bath indicated as the potential relative to a standard hydrogen electrode, is maintained at equal to or greater than 700 mV, and is used to monitor treatment of the bath.

In contrast to the recited claim language, Matsuda specifically discloses a treatment bath that is not substantially free of metal ions, other than those which are a component of a film which will form sludge. For example, Matsuda specifically addresses "the removal of solid matter (sludge) from a chemical treatment bath" (col. 6, lines 23-37).

Moreover, Matsuda also discloses that the control of the phosphate chemical bath is carried out by employing a means for controlling the input of energy into the chemical treatment bath (temperature control, control of the pressure to the liquid by controlling revolving speed of the circulation pump, stabilization of the state of energy and the solution by altering between a state of reaction and the treatment and a state of no reaction) and filtration, etc., to create and maintain a condition in which non sludge is formed in a chemical treatment path (col. 7, lines 44-58). The first purpose of the filtering circulation pump and the filter is the stabilization of the thermodynamic energy state of the solution phase of the reactive solution (col. 7, lines 64-66). The second purpose of the filtering circulation pump and the filter is the removal of sludge which is produced in the treatment bath. If the produced sludge, particularly energy-unstable sludge is allowed to remain, then the treatment bath tends to produce even more sludge. It is thus preferable to rapidly remove the sludge which is produced (col. 8, lines 60-65).

Accordingly, Matsuda clearly discloses metal ions other than those which are a component of the film in the treatment bath and form sludge.

Furthermore, because Matsuda contains metal ions other than those which are a component of the film, the bath is unstable (i.e., active) and the NO_3^- is therefore easily reduced to NO causing the formation of sludge. For example, Matsuda discloses that manganese and calcium have a dissolution-precipitation equilibrium potential of less than -1.18 and -1.84 volts, respectively. The manganese calcium are precipitated as a phosphate with the electric charge unchanged and are not affected by decomposition of water. Thus, the treatment bath of Matsuda contains metal ions other than those which are component of a film. Accordingly,

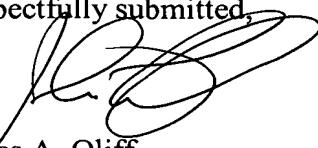
Matsuda fails to disclose a treatment bath that is substantially free of metal ions, other than those which are a component of a film which would form a sludge. Therefore, Matsuda fails to disclose each and every feature recited in the rejected claims as amended.

Regarding the rejection of claim 3, the Examiner points out that Matsuda teaches using iron as the electrode material and alleges that a person having ordinary skill in the art would have maintained the amount of Fe ions within a solubility limit of Fe^{3+} ions because Fe^{3+} is stably present in the bath when an ORP of 560 mV or greater is present. However, Matsuda relates to an electrolytic treatment using a non-electrolytic treatment bath which contains metal ions other than those which are a component of a film. Therefore, a sludge is inevitably formed as evidenced by the recitation of claim 1 which recites that circulating and filtering of the phosphate chemical treatment solution is provided to remove energy destabilizing sludge. As Matsuda fails to disclose or suggest each and every feature recited in the rejected claims, withdrawal of the rejection of claims 1-15 under 35 U.S.C. §103(a) is respectfully requested.

II. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-15 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,

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